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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,911	03/02/2004	Robert G. Gels	Analog. 7099	1408

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EXAMINER	
LE, LANA N	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/790,911	GELS ET AL.	
	Examiner	Art Unit	
	Lana N. Le	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 12-14 is/are allowed.

6)☒ Claim(s) *1-8,10,11 and 15-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 7, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yukio et al (JP 06-177,680).

Regarding claim 1, Yukio et al disclose a radio frequency output power control system (fig. 1) for use in communication systems that use a modulation scheme having a non-constant amplitude envelope (envelope detecting via 41, 411 which changes according to signal S13; paras. 15, 17-18), said power control system comprising:

a power amplifier (15) having a power amplifier input (input of 15) for receiving an input signal with a non-constant amplitude envelope (para. 18), a power control input for receiving a power control signal (from control circuit 14), and a power amplifier output (output of 15) for providing an amplified output signal (para. 21);

a track and hold circuit (43) for tracking a measured reference power signal that is representative of a modulation of the input signal (paras. 17-20); and

subtraction means (42) for subtracting both a feedback signal (feedback from output S13 to capacitor to diode 411 to input of subtractor 42) an output of said track and hold circuit (43) from said measured reference power signal (from 412 passing to

track and hold 43 to subtractor 42) to provide a power control signal (gain control output signal from 35, 14; para. 6) that is coupled to the power control input (para. 21), such that the power control signal is responsive to the feedback signal, the output of the track and hold circuit, and the measured reference power signal (paras. 17-21).

Regarding claim 3, Yukio et al disclose the radio frequency output power control system as claimed in claim 1, wherein the track and hold circuit is responsive to a HOLD.sub.on signal (P43; para. 20).

3. Regarding claim 7, Yukio et al disclose the radio frequency output power control system as claimed in claim 1, wherein said track and hold circuit (43) is coupled to said power amplifier (15) via an error amplifier (33).

Regarding claim 8, Yukio et al disclose the radio frequency output power control system as claimed in claim 1, wherein said system is employed to control power for a modulated signal with non-constant envelope (para. 18; envelope and voltage changes according to transmitted signal S13).

Regarding claim 10, Yukio discloses the radio frequency output power control system as claimed in claim 1, wherein said system is further responsive to a TX.sub.Ramp signal (from 35, 14 to ramp the power level of the PA) (para. 6).

3. Claims 15, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Yukio et al (JP 06-177,680) in view of Davidson (US 5,054,116).

Regarding claim 15, Yukio et al disclose a radio frequency output power control system comprising:

a power amplifier (15) coupled to an input signal (input signal from 14);

a track and hold circuit (43) coupled to a reference signal (predetermined reference voltage from 412);

and combiner means (42) for providing a corrective signal (V13) to said power amplifier (15) responsive to said reference signal (predetermined reference voltage), an output signal (V43) from said track and hold circuit (43), and a feedback signal (feedback from PA 15 via capacitor and 411) (paras. 17-21) by subtracting (via 42) the feedback signal (feedback via capacitor and 411) and the output signal (V43) of the track and hold circuit (43) from the reference signal to provide the corrective signal (corrective gain control signal via 33, 35, 14) that is coupled to the power amplifier (15). Yukio et al do not disclose a reference logarithmic unit coupled to a reference signal and a feedback logarithmic unit coupled to a feedback signal. Davidson discloses a reference logarithmic unit (332) coupled to a reference signal (336) (logarithmic unit similar to log unit 132 described in fig. 1; col 5, lines 22-25; see fig. 3); a feedback logarithmic unit (314) coupled to a feedback signal (feedback signal received via detector 312) (col 6, lines 40-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a reference logarithmic unit and a feedback logarithmic unit in order to have the output of the power amplifier follow the logarithmic reference output with reasonably good fidelity within the dynamic range and bandwidth limitations of the feedback loop to keep the feedback loop constant and allows the reference level to be easily calibrated in decibels as suggested by Davidson (col 4, lines 48-56; col 5, lines 21-32).

Regarding claim 20, Yukio et al and Davidson disclose the radio frequency output power control system as claimed in claim 15, wherein Davidson discloses combiner means (382) is further responsive to a TX.sub.Ramp signal (340 to 350, 352 to ramp power of 308) (fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to ramp the transmitted signal in order to control the power of the power amplifier to an adequate power level required for transmission of data.

Regarding claim 21, Yukio et al and Davidson disclose the radio frequency output power control system as claimed in claim 15, wherein Yukio et al disclose the track and hold circuit (43) is responsive to a HOLD.sub.on signal (P43; para. 20).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al (JP 06-177,680) in view of Pehlke et al (US 6,566,944).

Regarding claim 2, Yukio et al disclose the radio frequency output power control system as claimed in claim 1, wherein Yukio et al do not disclose said track and hold circuit and said measured reference power signal are coupled to the input signal via a

logarithmic power detect unit. Pehlke et al disclose a track and hold circuit (116) and said measured reference power signal (from 64) are coupled to the input signal (input of PA 48) via a power detect unit (detected at output of 102) (fig. 11). Yukio et al and Pehlke et al do not disclose a logarithmic detect unit. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have logarithmic detect unit in order to convert the reference signal and switching to a DC level representing the power of the reference input signal.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al (JP 06-177,680) in view of Nitta (US 6,617,930).

Regarding claim 4, Yukio et al disclose the radio frequency output power control system as claimed in claim 1, wherein Yukio et al do not disclose the input signal is an IF output signal provided by a transmitter unit. Nitta discloses an input signal (to be inputted to PA 5 via 6, 7) is an IF output signal (IF output signal from an indoor unit transmitter) provided by a transmitter unit (indoor unit transmitter) (col 1, lines 55-62; col 2, lines 10-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the input signal be an IF signal in order to provide only the necessary DC voltage from an indoor transmitter to the power amplifier to reduce power usage as suggested by Nitta (col 3, lines 20-39).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al (JP 06-177,680) in view of Vakilian et al (US 6,795,712).

Regarding claim 5, Yukio et al disclose the radio frequency output power control system as claimed in claim 1, wherein said input signal comprises baseband reference

outputs from a transmitter unit. Vakilian the input signal comprises baseband reference outputs from a transmitter unit (col 5, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the input signal to the power amplifier be transmitted from a baseband reference output in order to provide a reference voltage to the power control circuit to adjust the power of the RF amplifier.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al (JP 06-177,680) in view of Komatsu (US 6,144,860).

Regarding claim 6, Yukio et al disclose the radio frequency output power control system as claimed in claim 5, wherein Yukio et al do not disclose said system further includes a pair of squaring units. Komatsu discloses a transmission power control system including a pair of squaring units (44, 45) (col 9, lines 25-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the squaring units to Yukio et al in order to calculate the desired power level to compare with the reference level.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al (JP 06-177,680) in view of McKay Sr. et al (US 2004/0,166,802).

Regarding claim 11, Yukio et al discloses the radio frequency output power control system as claimed in claim 1, wherein Yukio et al do not disclose said system further includes a feedback logarithmic power detect unit. McKay Sr. et al system further includes a feedback logarithmic power detect unit (para. 109; fig. 19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a log power detector in order to detect power with commensurate accuracy which

enables the implementation of signal amplitude control that can function without an individual calibration for each exemplary unit as suggested by McKay Sr. et al.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al in view of Davidson (US 5,054,116) and further in view of Humpherys (US 5,656,929).

Regarding claim 16, Yukio et al and Davidson disclose the radio frequency output power control system as claimed in claim 15, wherein Yukio et al and Davidson do not disclose said reference signal includes a modulated RF signal. Humpherys discloses an RF modulated reference signal (col 1., lines 27-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the reference voltage come from an RF source in order to compare the voltage from a reference RF signal with the output RF detected signal within the same frequency band.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson (US 5,054,116) in view of Nitta (2003/0,092,407).

Regarding claim 17, Yukio et al and Davidson disclose the radio frequency output power control system as claimed in claim 15, wherein Yukio et al and Davidson do not disclose the reference signal includes a modulated IF signal. Yamada discloses converting a modulated IF signal into a reference voltage signal (paras. 64, 74). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an IF reference source and an IF detector generating the reference voltage of Yukio et al and Davidson in order to compare an intermediate reference

voltage with the output detected signal to compare the detected power level with a reference intermediate level to attenuate the power of the power amplifier.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yukio et al in view of Davidson (US 5,054,116) in view of Vakilian et al (US 6,795,712).

Regarding claim 18, Yukio et al and Davidson disclose the radio frequency output power control system as claimed in claim 15, wherein Yukio et al and Davidson do not disclose the reference signal includes baseband I and Q signals. Vakilian discloses the reference signal includes baseband signals (col 5, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the reference signal be baseband signals in order to provide a reference voltage to the power control circuit to adjust the power of the RF amplifier. Yukio et al, Davidson and Vakilian do not disclose the reference baseband signal is I and Q signals. However, it is well known and notoriously old in the art to have the baseband signal be digital. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the baseband signal be I and Q signals in order to output differential signals in a digital system.

13. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson (US 5,054,116) in view of Yukio et al (JP 06-177,680).

Regarding claim 19, Yukio et al and Davidson disclose the radio frequency output power control system as claimed in claim 18, wherein Yukio et al and Davidson do not disclose the system is employed to control power for a modulated signal with non-constant envelope. Yukio et al disclose controlling power for a modulated signal with

non-constant envelope (para. 15, 18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to detect a non constant envelope in order to detect a changing envelope depending on the output signal level of the power amplifier.

Response to Arguments

14. Applicant's arguments and amendment with respect to claims 1-8, 10-11, and 15-21 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

15. Claims 12-14 are allowable over the cited prior art.

16. The following is an examiner's statement of reasons for allowance:

Regarding claim 12, Davidson (US 5,054,116) discloses a radio frequency output power control system for use in communication systems that use a modulation scheme having a non-constant amplitude envelope (during pulse amplitude modulation mode, envelope of modulated RF signal at output 311 varies and feedback to control the RF output) (col 5, lines 40-61), said power control system comprising:

a power amplifier (308) having an input to receive an input signal with a non-constant amplitude envelope, a power control input (input of 308) for receiving a power control signal (pulse modulated control signal from 340, 352), and an output (output of 308) for providing an amplified output signal (311);

a track and hold circuit (355) for tracking a reference signal (col 5, line 52-68);

a first combiner (382) for providing a difference between said reference signal (336, 380) and an output signal of said track and hold circuit (355) (col 6, lines 14-21), However, Davidson and the cited prior art fail to disclose a second combiner for providing a difference between a feedback signal and an output of said first combiner wherein said power control signal is responsive to the difference between the feedback signal and the output of the first combiner.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N. Le whose telephone number is (571) 272-7891. The examiner can normally be reached on M-F 9:30-18:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lana N. Le
11-29-06

Lana Le

LANA LE
PRIMARY EXAMINER